56TH CONGRESS, 2d Session. } SENATE. { DOCUMENT No. 71.

SUBMARINE BOAT HOLLAND.

LETTER

FROM

THE SECRETARY OF THE NAVY,

TRANSMITTING,

IN COMPLIANCE WITH RESOLUTION OF THE SENATE OF DECEMBER 10, 1900, COPIES OF ALL REPORTS IN THE POSSESSION OF THE NAVY DEPARTMENT AND EXTRACTS FROM REPORTS ON FILE IN THE BUREAU OF NAVIGATION, CONCERNING THE SUBMARINE BOAT HOLLAND.

JANUARY 3, 1900.—Ordered to be printed.

NAVY DEPARTMENT,
Washington, December 18, 1900.

SIR: In compliance with the resolution of the United States Senate of December 10, 1900, I inclose herewith copies of all reports in the possession of the Department and extracts from reports on file in the Bureau of Navigation. These contain all remarks concerning the submarine boat *Holland* made in reports to the Department since her purchase by the Navy Department.

The Bureau of Navigation, in forwarding to the Department copies of such parts of the papers on file in that Bureau as contain remarks of officers mentioned in the resolution in regard to the Holland boat, states that these remarks are in some cases included in reports in regard to other matters, and that such reports are not given in full. The Bureau suggests that the Department should recommend to the Senate that it is not desirable for the public interests that the reports containing information other than that concerning the performances of the *Holland* should be made public.

Very respectfully,

J. D. LONG,
Secretary.

THE PRESIDENT PRO TEMPORE, UNITED STATES SENATE,
Washington, D. C.

S D—5—27

[Extracts from the records of the Bureau of Navigation concerning the U. S. T. B. *Holland.*]

From report of commanding officer of the U. S. S. *Scorpion:*

The moral effect of an anticipated attack from the Holland submarine boat was great, particularly as the ship was so stationed as to preclude the possibility of being continually under way at a speed sufficient to have an opportunity of escaping such attack.

From report of the commanding officer of the U. S. S. *Kearsarge:*

It is clear that the Holland type will play a very serious part in future naval warfare. There is no doubt whatever that the vessel at Newport can approach a turret ship unseen, either by night or day. Her only danger is she may be run over herself by picket or large vessel.

From report of commander in chief, North Atlantic Station:

The *Holland* impressed everyone with the idea that under ordinary circumstances she could always get in a torpedo, either day or night, without being discovered. Unfortunately, in her attack upon the *Kearsarge*, the second night, she did not reach there until several torpedo boats did, so that so strict a lookout was probably not being kept as would otherwise have been.

The second night's operations consisted in an attack upon the outside, or Red, squadron by five torpedo boats and the *Holland.* As a rule, the torpedo boats were successful, although this would scarcely have been the case with an efficient picket-boat service.

A.

NAVAL TORPEDO STATION,
Newport, R. I., June 28, 1900.

SIR: Referring to the Bureau's letters Nos. 4362, April 30, and 4746, May 5, 1900—

1. I have to inform the Bureau that the submarine boat *Holland* arrived at this station on Sunday, June 24, 1900, in tow of the tug *Osceola* and in charge of Mr. Cable, of the Holland company, together with three assistants.

2. As the boat was not in running condition I have not taken complete charge of her as yet, although the station watchmen look out for her during the absence of the company's men.

3. On the trip up a section was burned out of the armature of the main motor. This motor has now been dismantled by the company's men and an examination has been made, and it is considered that the services of an expert electrician are required. Mr. Cable, the company's representative, who is in charge, suggests that an expert from the works of the Electro-Dynamic Company, of Philadelphia, be sent on here to repair damages, as it is impossible to remove the motor or the armature from the boat; and also, as this company furnished the machines, it is considered necessary that their expert should do the work. It will take four or five days to do this work.

4. I have to request information from the Bureau as to whether this work is to be undertaken and paid for by the Government, in which case the appropriation under which the work is to be done is requested, or whether it is obligatory on the Holland Company to turn her over at this station in good condition.

5. I have also to request information in regard to the officers and crew for this boat. Several officers have volunteered for the command, but have not been allowed to take the duty on account of the

exigencies of the service. Lieutenant Caldwell, a member of the class under instruction, has been placed in temporary charge of the boat, but at the end of the course at this station he will resume his duties on the staff of the Admiral of the Navy and will not be available. In regard to the crew, there are at present no sufficiently reliable men available for the boat, and as the torpedo boats are so very short-handed it would be almost impossible to spare them if any of them were considered to have sufficient qualifications for the work.

Very respectfully,

N. E. MASON,
Commander, U. S. N., Inspector of Ordnance, in Charge.

BUREAU OF ORDNANCE,
Navy Department.

[First indorsement.]

NAVY DEPARTMENT, BUREAU OF ORDNANCE,
Washington, D. C., June 29, 1900.

1. Respectfully referred to the Bureau of Navigation, with reference to the queries contained in paragraph 5 of the within letter.

2. As seven other submarine boats are authorized, it would seem to be essential that a certain number of men and at least one officer to begin with should be trained as to their use, and the Bureau respectfully recommends that an officer be detailed for service in connection with the *Holland*, and that a crew be assigned to her which, according to the Holland Company, should consist of a commanding officer and the following men: 1 electrician, 2 machinists, 2 seamen gunners.

3. By the terms of its contract the company is obliged to instruct the Government in the use of the *Holland*, and as the company's employees are now at Newport it would seem to be an appropriate time to make use of their services.

4. The Bureau has ordered the necessary repairs made to the *Holland.*

5. The Bureau understands that Junior Lieut. Frank P. Baldwin, U. S. N., has applied for command of the *Holland.*

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

[Second indorsement.]

DEPARTMENT OF THE NAVY, BUREAU OF NAVIGATION,
Washington, D. C., June 30, 1900.

Respectfully returned to inspector of ordnance, Naval Torpedo Station, Newport, R. I. (through Bureau of Equipment).

1. Referring to second paragraph of first indorsement, there are no electricians, machinists, or seamen gunners available for duty other than those attached to the torpedo station and torpedo boats. The Bureau suggests that the inspector of ordnance in charge of torpedo station assign such persons as he may consider competent from the torpedo boat flotilla.

WM. S. COWLES,
Acting Chief of Bureau.

[Third indorsement.]

NAVAL TORPEDO STATION,
Newport, R. I., July 6, 1900.

Noted, and respectfully returned to Bureau of Ordnance.

1. As we are now running six torpedo boats with men enough to make up the complement of four, it will cripple the station somewhat to furnish a crew for the *Holland*. However, it will be done, but a skilled electrician can not be obtained at this station.

2. In regard to the officers, Lieutenant Caldwell has been temporarily detailed in charge of the boat, and will possibly be able to remain with her until the latter part of September, when he will have to resume his duties on the staff of the Admiral.

N. E. MASON,
Commander, U. S. Navy, Inspector of Ordnance, in Charge.

B.

NAVY TORPEDO STATION,
Newport, R. I., July 2, 1900.

SIR: 1. The bottom of the submarine boat *Holland* is apparently badly fouled, and there are signs of pitting along and just below the water line.

2. This boat was last docked and painted on November 29, 1899, and should be docked again as soon as possible.

3. As there is some doubt in my mind as to whether the torpedo station ways will safely haul this boat out on account of the greater part of the weight coming on a small portion of the ways at one time, I have to request permission to have her docked and cleaned at Providence or Bristol just as soon as the present repairs to the motor are completed.

Very respectfully,

N. E. MASON,
Commander, U. S. N., Inspector of Ordnance, in Charge.

BUREAU OF CONSTRUCTION AND REPAIR,
Navy Department.

(Through Bureau of Ordnance.)

C.

[Extract from Annual Report of Naval Torpedo Station, September 1, 1900.]

Submarine boat Holland.—The *Holland* submarine torpedo boat arrived at this station on June 24, 1900, in charge of a crew furnished by the Holland Company. Lieut. Harry H. Caldwell, a member of the class under instruction, was detailed to take charge of her with a navy crew, and since that date has been engaged in training and instructing this crew under the supervision of the crew furnished by the Holland Company. Lieutenant Caldwell volunteered for this duty and performed it very efficiently in addition to his work with the class under instruction, and to him is due all the credit for the present efficiency of the *Holland*. Up to the present date the boat has made ten runs entirely under the control of the navy crew. A number of minor

repairs to the machinery have been made from time to time. The navy crew is fast completing its instruction, and in all probability it will be possible to dispense with the *Holland* experts by September 1. This boat requires constant attention, and should be kept in commission all the time and not hauled out.

D.

NAVAL TORPEDO STATION,
Newport, R. I., October 1, 1900.

SIR: Referring to Bureau's letter No. 4362, of April 30, 1900, giving directions concerning the care and test of the submarine torpedo boat *Holland:*

1. I have to forward herewith, approved, copy of a report of Lieutenant Caldwell, U. S. N., commanding the *Holland*, on operations and experiments with that boat since her arrival at this station.

2. In my opinion the *Holland* has been a grand success so far, and for some time the naval crew have had entire charge of her, under command of Lieutenant Caldwell, running and working her both night and day without the presence of any of the Holland experts.

3. Having made several dives in the boat myself with the naval crew alone, I am of the opinion that they are competent in every way to maneuver and manipulate the boat successfully.

4. During the late combined maneuvers of the fleet, shore defenses, and the torpedo flotilla the *Holland* made a successful attack on the fleet at night by herself, without convoy, at a distance of 7 miles out from the mouth of the harbor and with the naval crew alone in her.

5. I have to call especial attention to the recommendation of Lieutenant Caldwell that this boat be not laid up for the winter but be kept in commission all the time. If torpedo boats will deteriorate, as they do while hauled out on the ways for short periods, surely a boat like the *Holland*, filled with various and delicate mechanisms, will be in better condition when kept running constantly.

6. As the temperature of the water, and also the weather, during the winter in Newport is not particularly favorable for submarine work, I have to recommend that this boat be sent south for further experiment and practice, and also for use as a school of instruction for the officers and crews of the other boats contracted for. Lieutenant Caldwell hopes to obtain permission from the Admiral to remain in command of the *Holland* and carry on this work, provided it is agreeable to the Department. I consider him well qualified for the duty, and recommend that he be given this command.

7. If either of the gunboats *Sandoval* or *Alvarado* or a small tug are available, I have to suggest that one of them be commissioned, under the command of Lieutenant Caldwell, with a detail of men, for submarine-boat work, the gunboat or tug to be the convoy and the living place for the crew, all of whom are for submarine work, a sufficient number in excess being sent to handle the convoy while maneuvering and diving. In this way constant drill and practice will be kept up, and if the boat is sent to some place like the Naval Academy for the winter months a great deal of instruction could be given to the officers of the service in a boat which is bound to be one of the future types.

8. A complete description of the *Holland*, together with as full instructions for her care and management, etc., as is possible, will be prepared by Lieutenant Caldwell at an early date and forwarded to the Bureau.

Respectfully,

N. E. MASON,
Commander, U. S. N., Inspector of Ordnance, in Charge.

BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

[First indorsement.]

DEPARTMENT OF THE NAVY, BUREAU OF ORDNANCE,
Washington, D. C., October 5, 1900.

1. Respectfully referred to the Department via Bureau of Navigation.

2. Attention is invited to the recommendations contained in paragraphs 5, 6, and 7 of the within letter of the inspector of ordnance in charge of the torpedo station, in which it is recommended that the *Holland* be sent south for further experiment and practice, suggesting Annapolis as a suitable place.

3. Attention is invited to paragraph 10 in the report of Lieut H. H. Caldwell, U. S. N., who has had charge of the *Holland* during the summer, and who is of the opinion that she should not be laid up, as there is danger of her deteriorating under such conditions.

4. In view of the fact that several submarine boats are under contract and that it will be necessary to instruct both officers and enlisted men as to their care and use, the Bureau is of the opinion that it would be advisable to make use of the *Holland* for the purpose, and as she can not be advantageously used during the winter months at a northern port, Annapolis would seem to be a suitable place.

5. The Bureau further recommends that the *Holland* be placed in commission and put under the command of Lieutenant Caldwell, if the same meets with the Department's approval, and that a suitable tender be assigned to carry her stores and to provide living quarters for her personnel.

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

[Second indorsement.]

DEPARTMENT OF THE NAVY, BUREAU OF NAVIGATION,
Washington, D. C., October 8, 1900.

Respectfully returned to the Bureau of Ordnance.

The different recommendations of the Bureau of Ordnance have been carried out by orders issued by the Department on October 6.

A. S. CROWNINSHIELD,
Chief of Bureau.

NAVAL TORPEDO STATION,
Newport, R. I., September 27, 1900.

SIR: 1. I have the honor to submit the following report of the operations of the *Holland* to date.

2. The *Holland* arrived at this station on June 24, 1900, in charge of Mr. Frank T. Cable and the crew of experts provided by the Hol-

land Company in accordance with paragraph 3 of the contract under which the boat was purchased. I was assigned to duty with the boat, and by July 7 Acting Gunner Owen Hill and 5 petty officers and seamen gunners had been selected from the numerous volunteers.

3. Shortly after the arrival of the boat two bars of the armature of the main motor burned out at different times, necessitating sending for an electrician from the builders in Philadelphia each time to put in new bars and rewind the bindings. This was due to moisture on the armature making short circuit between bars. No further trouble has been had from this, and care has been taken to run the motor for a few minutes every day to warm it up, and prevent the gathering of moisture. The *Holland* was accidentally sunk at her moorings about two years ago, and this same motor was soaked in salt water overnight, and after that much trouble was had from the same cause, but none from about eighteen months ago to this time. This armature is not removable from the boat as it should be, and it is very difficult to get the proper tension for rewinding the bindings in the contracted space it now occupies.

4. July 7 to 17 was spent by the naval crew learning the mechanism of the boat under the instruction of the Holland experts. On the 17th, 19th, and 20th made surface runs, using both gas engine and motor, and shifting from one to the other. On July 28 a submerged run was made, the boat handled by the Holland experts.

5. On July 31 the boat was hauled out on the ways at Crowley's shipyard, cleaned, and painted. Outside manhole plates were taken off midship and after ballast tanks, and considerable rusting was found in them, especially the after one, in which a large quantity of cork had been placed to reduce its volume for water. These tanks are not accessible for cleaning because the frames are close together, and have solid bulkheads across, with only small holes in them. In new constructions all ballast tanks should be made accessible for cleaning in every part by manholes with plates inside the boat.

6. On August 6, 7, 11, and 15 made submerged runs, gradually working in the naval crew and leaving out the Holland experts. Also exercised putting torpedo into boat and firing it.

7. On August 17 a cast-iron disk of the friction clutch connecting the gas engine to the motor broke. A new one was received from the makers in Philadelphia and put in on the 28th. It was strengthened by shrinking on a wrought-iron band, and no further trouble is expected with this clutch.

8. At about this time much difficulty was experienced in the supply of gasoline to the gas engine, much water being carried over with it. It was the practice of Mr. Cable to admit salt water to the gasoline tank to assist in getting the boat into diving trim. The gasoline was pumped to the engine through a float that was designed to rise and fall with the gasoline and remain in it, but it is supposed that it became leaky or sank far enough to take some of the water with the gasoline. The defect has been remedied by ceasing to put water in the gasoline tank, and I have never found it necessary to do so, the supply of gasoline being kept well up. An auxiliary feed pipe has been fitted, sticking down into the tank from the top, and this can be used in case it ever becomes necessary to use water in the tank. This tank has only one manhole, opening into the boat, and I am told that it is almost impossible with repeated washing to get the gasoline fumes out of the

tank so that a man can go in it with safety. It seems to me very necessary that there be two manholes in the tanks in the new boats in order to get a good current of air through it when it is opened for inspection and cleaning.

9. On August 30 and 31, September 5, 6, 8, and 11, practiced with submerged runs, the naval crew doing all the work.

10. The naval crew is now sufficiently well trained to dispense with the services of the Holland experts, but there is still much for us to learn about the boat. She is in excellent condition, and has had no breakdown since the friction clutch. There have been many minor accidents, but, I think, fewer than on the ordinary torpedo boat. I would urge that she be kept going, for I doubt seriously if she would maintain her efficiency without a crew to keep her delicate mechanism in order.

11. The enlisted men in such a boat must be of the highest intelligence, steady of nerve, quick of resource, and implicitly obedient. The present crew fulfills these requirements. The officer in the turret can not see what his men are doing and must be able to thoroughly rely on them, as the safety of the boat depends on the individual action of any one. It seems only fair that these men should receive extra compensation.

12. All the mechanism should be tested every day if possible. The main motor especially should be run every day. All gasoline connections should be examined every day. Each cell of the storage battery should be tested once a month for E. M. F. and gravity of acid, and acid should be added whenever necessary. The pump should be put on every ballast tank every day, and the Kingston valves should be worked at least twice a week. The boat should be ventilated as much as possible, but great care should be taken to protect the motors from moisture.

13. In concluding this report I desire to call your attention to the ability, patience, and courtesy shown by Mr. Cable and his assistants in instructing the naval crew in the handling of the *Holland*.

Very respectfully,

H. H. CALDWELL,
Lieutenant, U. S. N.

INSPECTOR OF ORDNANCE IN CHARGE,
Naval Torpedo Station, Newport, R. I.

E.

[Telegram.]

BUREAU OF ORDNANCE, NAVY DEPARTMENT,
October 13, 1900.

NAVAL TORPEDO STATION,
Newport, R. I.:

Send *Leyden* to convoy *Holland* to Delaware City. Will be met there from Annapolis. Notify Naval Academy probable date of arrival at Delaware City.

O'NEIL.

F.

[Telegram.]

NAVAL TORPEDO STATION,
Newport, R. I., October 13, 1900.

NAVY DEPARTMENT,
Washington, D. C.:

If *Potomac* not coming, *Leyden* can convoy *Holland* as far as Delaware City. Request small gunboat from Annapolis meet them there to take outfit and baggage back through canal and convoy to Annapolis. Superintendent Naval Academy agrees if Department approves. Probably ready Tuesday.

MASON.

(Through Bureau of Ordnance.)

G.

NAVAL TORPEDO STATION,
Newport, R. I., October 16, 1900.

SIR: Referring to Bureau's telegram of October 13, 1900, concerning sending the *Leyden* to convoy the *Holland* to Delaware City:

1. I have to inform the Bureau that the *Leyden*, Lieut. E. E. Capehart, U. S. N., commanding, with the *Holland* in tow, Lieut. H. H. Caldwell, U. S. N., commanding, left this station for Delaware City, Del., via the Sound, New York Harbor, Sandy Hook, and Delaware Bay, at 2 p. m. this day.

2. If the weather is pleasant, they expect to reach Delaware City Thursday evening, October 18. The Superintendent of the Naval Academy has been so informed.

3. As soon as the convoy from the Naval Academy has received the outfit and stores of the *Holland* from the *Leyden* her commanding officer has been directed to return to this station and resume his duties.

4. This report has also been made direct to the Navy Department.

Respectfully,

N. E. MASON,
Commander, U. S. N., Commanding.

BUREAU OF ORDNANCE,
Navy Department, Washington, D. C.

H.

DEPARTMENT OF THE NAVY, BUREAU OF ORDNANCE,
Washington, D. C., November 9, 1900.

SIR: 1. As a matter of general interest, the Bureau desires to know whether or not there was any truth in the recent newspaper reports of a gasoline explosion aboard the *Holland*, and if such an explosion really occurred, it is requested that a full statement of the circumstances may be supplied.

Respectfully,

THEO. C. FENTON,
Acting Chief of Bureau of Ordnance.

COMMANDING OFFICER U. S. S. HOLLAND,
Annapolis, Md.

(Through Superintendent Naval Academy.)

I.

U. S. S. HOLLAND,
Naval Academy, Annapolis, Md., November 10, 1900.

SIR: 1. Replying to the letter of the Bureau of Ordnance No. 10678, of the 9th instant, I have the honor to state that the newspaper reports of a gasoline explosion on board the *Holland* were false.

2. What probably gave rise to the above-mentioned reports is the fact that a small quantity of gasoline which had been pumped overboard from the *Holland* was intentionally ignited, causing a small blaze on the surface of the water, but no damage.

3. The newspaper report that the *Holland* dived about and under the French men-of-war *Cecille* and *Suchet* during their recent visit to Annapolis is equally false.

Very respectfully,

H. H. CALDWELL,
Lieutenant, U. S. N., Commanding.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

J.

U. S. S. HOLLAND, U. S. NAVAL ACADEMY,
Annapolis, Md., November 12, 1900.

SIR: 1. I have the honor to report that one or more armature bars of the main motor of the *Holland* burned out during a run this afternoon, disabling the boat until repaired.

2. This accident has occurred about four times during the history of the boat, and I am unable to assign any cause for it.

3. I request that I may be authorized to write to the makers of this armature, the Electro-Dynamic Company, of Philadelphia, for one of their experts to put in new bars and insulation and rebind the armature. This course was followed when a similar accident occurred at Newport this summer. A requisition for this labor and repairs is forwarded to the Department to-day.

Very respectfully,

H. H. CALDWELL,
Lieutenant, U. S. N., Commanding.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

K.

DEPARTMENT OF THE NAVY, BUREAU OF ORDNANCE,
Washington, D. C., November 14, 1900.

SIR: 1. The Bureau has to inform you that since the *Holland* has been received by the Government some of the armature bars of her main motor have been burnt out, in two instances compelling the employment of an expert from the Electro-Dynamic Company, of Philadelphia.

2. The commanding officer of the *Holland* states that he is unable to assign any cause for these accidents.

3. In view of the fact that there are other boats of the type now building, the Bureau requests that you will consider this question, and see what can be done toward reducing the danger from burnt-out armatures.

4. Did you ever have this trouble when the boat was in your hands?

5. The Bureau will be very glad to hear from you in regard to the matter at an early date, and will try to furnish any further information that you may desire.

Respectfully,

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

HOLLAND TORPEDO BOAT CO.,
No. 38 Corcoran Building, Washington, D. C.

L.

U. S. S. HOLLAND,
Naval Academy, Annapolis, Md., November 16, 1900.

SIR: 1. I have the honor to acknowledge the receipt of the letters of the Bureau of Ordnance, No. 11695, of the 14th instant, referring to the burning out of armature bars in the main motor of the *Holland*.

2. In my opinion, these accidents are due to faulty design of the armature, the bare copper bars being inserted in slots of the core, with only a narrow space in which the insulating material, "micanite," is inserted. When moisture makes its way into the insulating material, it forms a short circuit and fuses the copper of the bars, disabling the motor.

3. In the *Holland* every possible precaution is taken to keep moisture out of the motor, but it seems impossible to prevent a recurrence of the accident at intervals.

4. I am informed that a different design of armature is adopted for the new boats, in which the bars are baked several times in insulating varnish and completely wrapped with an insulating material, and it is hoped that there will be no trouble with them.

Very respectfully,

H. H. CALDWELL,
Lieutenant, U. S. N., Commanding.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

M.

THE HOLLAND TORPEDO BOAT COMPANY,
New York, November 17, 1900.

SIR: Your letter of November 14, No. 11695, received.

In reply we would say that we submitted your letter to Mr. Cable, the former captain of the boat and the one person familiar with the electrical equipment, and he gives the following answers to your questions:

1. The cause of the burning out of armature bars on main motor of the *Holland* is partly due to the following: The armature is what is

termed a bar-wound type; that is to say, the winding is composed of copper bars laid in slots and insulated from the iron by mica strips. These strips are placed so that a joint is made at the top of the bar near the surface of the iron core. Condensation forms in this joint and connects the bar with the core. In this condition, when a ground occurs at any other point in the service, the current passes from the copper bar of the winding to the core, forming an arc which carbonizes the insulation and burns out the bar.

As long as the rest of the service is free from grounds this can not occur. We had this trouble on one occasion before the *Holland* made her first run, but the cause was due to the fact that the man in charge left the motor uncovered and the water dripped from the hull, saturating the armature winding.

2. In the boats now building this trouble is entirely eliminated by making the insulation of each bar in several layers so that no joint occurs to admit moisture.

3. At the time of the building of this motor the winding of the armature was the best then known. We are informed by Mr. Cable that very marked improvements have been made in the manner of insulating the windings, and this improved method is to be used in the new boats.

4. Appreciating the interest which you have taken in the success of the *Holland*, we desire to offer to your Bureau to have a new armature built at our expense, with the same insulation of each bar, in several layers, as will be used in the new boats, and when that is finished and delivered to you we will also have the armature now in the boat rewound and delivered, so that you will always have a spare armature.

If this is satisfactory to you, please notify us and the order will be placed at once with the Electro-Dynamic Company of Philadelphia.

Very respectfully,

HOLLAND TORPEDO BOAT COMPANY,
ELIHU B. FROST, *Secretary.*

Rear-Admiral CHARLES O'NEIL, U. S. N.,
Chief of Bureau of Ordnance,
Navy Department, Washington, D. C.

N.

U. S. S. HOLLAND,
Naval Academy, Annapolis, Md., November 17, 1900.

SIR: I have the honor to report that the repairs to the armature of the main motor of the *Holland* were completed to-day.

Very respectfully,

H. H. CALDWELL,
Lieutenant, U. S. N., Commanding.

The SECRETARY OF THE NAVY,
Navy Department, Washington, D. C.

O.

DEPARTMENT OF THE NAVY, BUREAU OF ORDNANCE,
Washington, D. C., November 19, 1900.

SIR: 1. The Bureau is in receipt of a letter from the commanding officer of the U. S. S. *Holland*, relative to the burning out of armature bars in the main motor of that vessel, which reads in part as follows:

In my opinion these accidents are due to faulty design of the armature, the bare copper bars being inserted in slots of the core, with only a narrow space in which the insulating material, "micanite," is inserted. When moisture makes its way into the insulating material it forms a short circuit and fuses the copper of the bars, disabling the motor.

In the *Holland* every possible precaution is taken to keep moisture out of the motor, but it seems impossible to prevent a recurrence of the accident at intervals.

I am informed that a different design of armature is adopted for the new boats, in which the bars are baked several times in insulating varnish and completely wrapped with the insulating material, and it is hoped that there will be no trouble with them.

2. In this connection the Bureau desires to state that this burning out of the main-motor armature has occurred four times since the *Holland* has been in Government hands, and that each time this Bureau has had the repairs made, the first three times because the boat was in the hands of the Bureau, at the torpedo station, for experimental purposes, and the last time at the Naval Academy, in order that the boat might be put in condition pending the settlement of the question of cognizance herein raised.

3. The Bureau now feels it its duty, however, since other boats of the kind are contracted for, and as the *Holland* has left the torpedo station, to request the Department to determine the degree to which each of the bureaus is responsible for vessels of this type. Heretofore this Bureau has controlled the vessel in her entirety, but it is thought that this is not in accordance with the present system, and the Bureau therefore requests the Department to inform it as to its degree of responsibility for the *Holland* and similar vessels.

4. Pending further instructions from the Department, this Bureau will continue to keep the *Holland* in the most efficient condition possible.

Respectfully,

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

THE SECRETARY OF THE NAVY.

P.

DEPARTMENT OF THE NAVY,
BUREAU OF ORDNANCE,
Washington, D. C., November 20, 1900.

SIRS: Replying to your letter of November 17, 1900, relative to the burning out of the main-motor armature of the *Holland:*

1. The Bureau accepts, with thanks, your offer to furnish a new armature for that vessel and to rewind the present one.

2. If you will kindly forward the new armature to the boat, at the Naval Academy, Annapolis, Md., the old one will be sent to such point as you may designate, upon its receipt.

Respectfully,

CHARLES O'NEIL,
Chief of Bureau of Ordnance.

HOLLAND TORPEDO BOAT COMPANY,
New York, N. Y.

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